July 14, 1936. R. W. CHAPMAN 2,047,308

ELECTRICAL THERAPEUTIC PAD

Filed May 5, 1934

Fig.1.

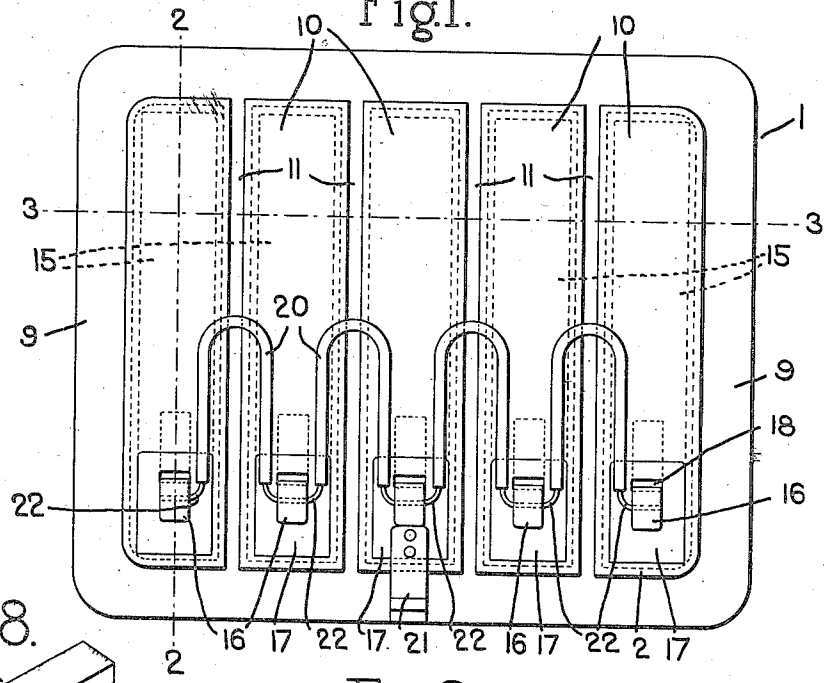


Fig.8.

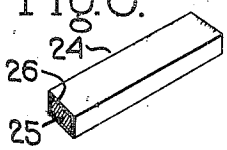


Fig.2.

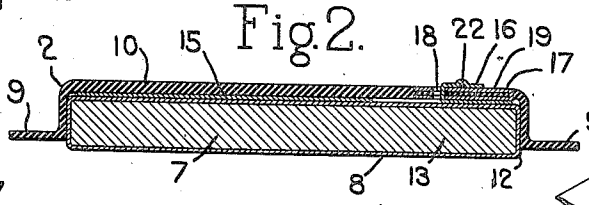


Fig.7.

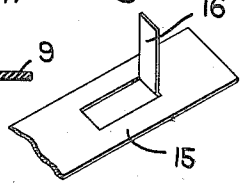


Fig.6.

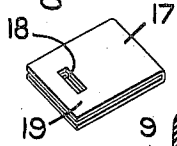


Fig.3.

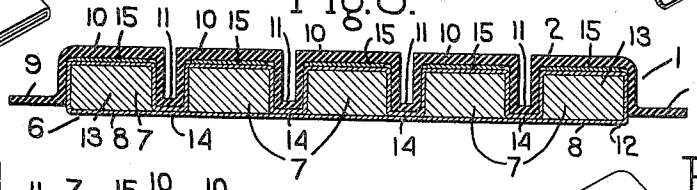


Fig.4.

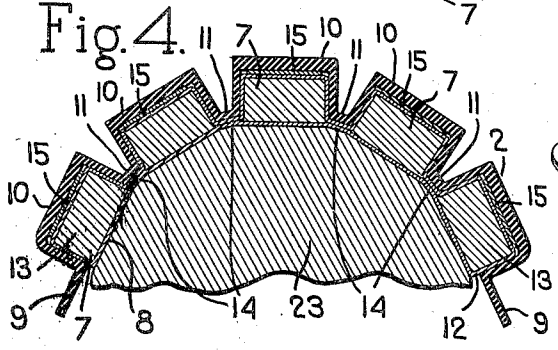
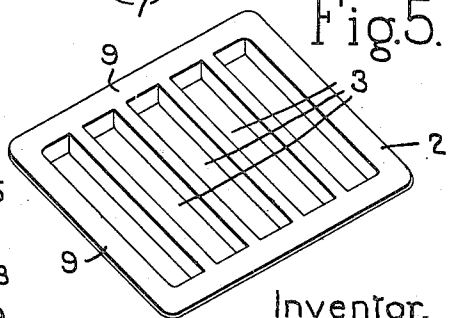


Fig.5.



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ELECTRICAL THERAPEUTIC PAD

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Application May 5, 1934, Serial No. 724,078

6 Claims. (Cl. 128—417)

This invention relates to electrical therapeutic pads such as are used in connection with electrical therapeutic apparatus, one type of which is illustrated in my Patents No. 1,268,545, June 4, 1918, or No. 1,587,505, June 8, 1926, or No. 1,925,370, September 5, 1933.

The pads used in connection with such apparatus are sometimes constructed with an envelope member of rubber or other insulating material which is provided with a pad-receiving pocket, and a pad member which fills the pocket and has one face exposed for contact with the part to be treated. For some medical treatments a pad member of absorbent material is considered to be best while for other treatments a pad member having a metallic surface is deemed more beneficial. Both forms of pad are usually provided with a wiring terminal to which the circuit wire from the electrical therapeutic apparatus may be attached. In the case of a pad having an absorbent pad member it is customary to moisten the absorbent pad member before it is applied to the part to be treated, the moistening of the pad serving to decrease the electrical resistance and form a better contact.

One object of the present invention is to provide an improved form of pad which is constructed so that it will fit and have proper contact with curved surfaces such as those presented by a person's arm, leg, shoulder, etc. as well as with flat surfaces.

This object is accomplished by making the pad in sections which are flexibly connected together, each section presenting a pad member which is enclosed, except at its operative surface, within an envelope of rubber or similar material, each section also having a circuit connection by which the necessary current may be supplied to the pad section.

In order to give an understanding of the invention I have illustrated in the drawing some selected embodiments thereof which will now be described after which the novel features will be pointed out in the appended claims.

Fig. 1 is a view of a pad embodying my invention;

Fig. 2 is a section on the line 2—2, Fig. 1;

Fig. 3 is a section on the line 3—3, Fig. 1;

Fig. 4 is a sectional view also on the line 3—3, Fig. 1 but showing the pad as applied to a rounded surface such as that presented by one's arm or shoulder;

Fig. 5 is a perspective view of the rubber envelope showing the pockets in which the pad members are received;

Fig. 6 is a perspective view of one of the contact members to which the electrodes are secured;

Fig. 7 is a fragmentary perspective view of one of the electrodes;

Fig. 8 is a fragmentary perspective view illustrating a different form of pad member from that shown in Figs. 2 to 4.

The pad is indicated generally at 1. It comprises in its construction an envelope member 2 of insulating material, preferably of soft rubber, which is formed with a plurality of pad-receiving pockets 3 as shown best in Fig. 5, and a pad member formed with a plurality of pad sections adapted to be received in the pockets 3, each section having a face which is exposed and is adapted to be placed in contact with the part to be treated.

The pad member may be constructed with a fibrous and absorbent face or may be constructed with a metallic face, depending upon the character of the treatment to be given to the patient.

The envelope member 2 will preferably be molded to present the sections 10, each section forming one of the pad-receiving pockets 3. The adjacent sides of the adjacent sections 10 are connected by a web portion 11 and the envelope is provided with a peripheral flange 9 extending entirely around it, said flange and the portions 11 occupying substantially the same plane.

As stated above the pad is made in sections which are received in the pockets 3. In Figs. 2, 3 and 4, I have shown a pad member, indicated generally at 6, which is constructed of absorbent material and which is made in a plurality of pad sections 7 that are located in the pockets 3. In Fig. 8, I have shown a pad section 24 having a metallic surface and which is of a size to fit into one of the pockets 3.

Referring now to the form of the invention shown in Figs. 2 to 4 in which the pad member is formed of the separate pad sections 7 flexibly connected together, each pad section is made of some suitable absorbent material 13, such for instance as asbestos, and is covered by a casing or covering 12 of some suitable fabric. The separate sections 7 of the pad are flexibly connected by the portions 14 of the fabric covering 12 and are thus integrally connected.

Each pad section 7 has associated with it an electrode to which the circuit wire is connected. These electrodes are indicated at 15 and are in the nature of plates that are situated between each pad section 7 and the rear wall of the cor-

responding pocket 3 of the envelope or pad-holding member 2.

The electrode plates 15 are preferably of a size corresponding to the pad sections. Each electrode 15 is formed with a wiring terminal 16 in the form of a finger or projection which conveniently can be struck up from the electrode as shown in Fig. 7. These wiring terminals 16 extend through openings 17 formed in the back wall of the envelope 2 and are constructed to have the circuit wires attached thereto in some suitable way. In the construction shown the outer wall of each pocket 3 has a contact plate 17 molded therein, said plate having a surface exposed on the outside of the envelope or pad-holding member 2.

The contact plate herein illustrated is made of a strip of metal bent into the U shape as shown in Fig. 6 and provided with an opening 18. These contact plates are molded in the wall of the envelope 2 in such a way that one leg 19 of each plate is exposed on the outer surface of the envelope 2.

The wiring terminal projections 16 extend through the openings 18 and are bent over against the exposed face of the contact member 17.

The contact plates 17 are all connected through the medium of a wire connection 20 and one of the contact plates (the central contact plate in Fig. 1) is provided with a terminal 21 to which the circuit wire may be connected in any suitable way. A convenient way of electrically connecting the wire connection 20 to the contact plates 17 and the wiring terminals 16 is by stripping all the insulation from the wire 20 at intervals as shown at 22 and then placing the bared portions of the wire against and in contact with the contact plate 17 and bending the wiring terminal 16 over the bared wire and into engagement with the contact plate. To make a permanent connection the bared portions 22 of the wire may be soldered to the contact plate and the wiring terminal. The contact plates, and the electrodes are thus all connected in multiple.

The sectional pad member 6 is readily removable from the rubber envelope 2 and in using the device this pad member will be removed from the envelope and moistened to the desired degree, after which it will be replaced in the envelope as shown in the drawing. The pad is then placed on the part to be treated with the surface 8 of the pad member in engagement with the flesh, and the current is supplied to the pad through an electrical connection connected to the terminal 21. If the pad is applied to a flat portion of the body it will have the shape shown in Fig. 3. If the arm or the shoulder or some other portion of the body having a rounded contour is to be treated then the pad when placed thereon will assume the position shown in Fig. 4 wherein 23 indicates the portion of the body to which the pad is applied. When the pad is thus applied to a rounded portion of the body it will assume the curved shape shown in Fig. 4 and thus the operative surfaces of the pad will conform accurately to the rounded surface to which it is applied.

It will be noted that the peripheral flange 9 is in the same plane as the connecting portions 11 between the sections and hence when the pad is applied to a rounded surface as shown in Fig. 4 there will be no buckling of the flange. The wire connection 20 is made so that the portion of the wire connecting adjacent contact plates is of sufficient length to permit the separation of the sections of the pad when the latter is applied to a rounded surface.

For some electrical treatments it is desirable to use a pad having a metallic surface. In such case a pad constructed as shown in Fig. 8 may be employed, said figure showing one section only of the pad. This pad section is shown as formed with a body portion 25 of insulating material and a metallic sheath 26 covering the body and forming the exterior surface. This pad section is of a size to fit one of the pockets 3 and it will be understood that there will be a similar pad section in each of the pockets 3. These pad sections may be made so that they will fit the walls of the pocket 3 tightly enough to be retained therein by the frictional contact with the walls. In this embodiment the engagement of the metallic surfaced pad with the electrode 15 will furnish the necessary contact to carry the electric current to the operative surface of the pad and thus to the patient.

The different metallic pad sections 24 may, if desired, be flexibly connected together in some suitable way, or said pad sections may be entirely independent from each other. In either event, however, the fact that the pad member is made in sections and the sections are located in the flexibly-connected pockets 3, produces a flexible pad which can be easily bent to conform to curved surfaces.

If, for any reason, it is necessary to renew one of the electrodes 15, this can be readily done by melting the solder by which the wire and the wiring terminal is connected to the contact plate and then bending the wire terminal up into a right angular position so that it can be withdrawn from the opening 18.

The sectional pad herein shown may be considered as having a cellular structure, each section of the cover being in the form of a cell containing the corresponding pad section.

I claim:

1. A therapeutic pad comprising a pad-holding element of insulating material provided with a plurality of pockets and having means for flexibly connecting the pockets, a pad section in each pocket, means separate from the pad-holding element and exterior to the pockets for flexibly connecting the pad sections and an electrode in each pocket with which the pad section contacts, each electrode having a wiring terminal.

2. A therapeutic pad comprising a pad-holding element of insulating material provided with a plurality of pockets and having means for flexibly connecting the pockets, a pad section in each pocket, means separate from the pad-holding element and exterior to the pockets for flexibly connecting the pad sections, an electrode in each pocket with which the pad section contacts, each electrode having a wiring terminal exposed on the outside of the pad-holding element.

3. A therapeutic pad comprising a plurality of pad members, means integrally but flexibly connecting said members, an envelope member having open pockets, one for each pad member, in which the pad members are received and an electrode in each pocket in contact with the pad member therein and having a wiring terminal exposed on the exterior thereof.

4. A therapeutic pad comprising a pad-holding element of insulating material provided with a plurality of elongated pockets open on one face of said element and having a parallel arrangement, said pad-holding element being formed with thin web portions between adjacent pockets at the open

face by which the pockets are flexibly-connected, a pad member comprising a plurality of pad sections of a size to fit the pockets and means for integrally but flexibly connecting the pad sections, and an electrode associated with each pad section and provided with a wiring terminal on the exterior of the pad-holding element.

5. A therapeutic pad comprising a pad-holding element of insulating material provided with a plurality of pockets, a pad section in each pocket, means exterior to the pockets for flexibly connecting said pad sections, an electrode in each pocket associated with each pad section, and a wiring terminal for each electrode on the exterior of the pad-holding element.

6. A therapeutic pad comprising a pad-holding element of insulating material provided with a plurality of pockets and having means flexibly connecting the pockets together, a pad section in each pocket, an electrode in each pocket engaging the pad section therein and having a portion extending through the back of the pad-holding element and forming a wiring terminal on the exterior of said element.

RALPH W. CHAPMAN.